Question Paper

Exam Date & Time: 07-Jun-2019 (09:30 AM - 12:30 PM)

MANIPAL ACADEMY OF HIGHER EDUCATION

INTERNATIONAL CENTRE FOR APPLIED SCIENCES
IV SEMESTER B.Sc. (Applied Sciences) END SEMESTER THEORY EXAMINATIONS - APRIL / MAY 2019
MICROPROCESSORS [ICS 241]

Marks: 100 **Duration: 180 mins.**

A

Answer 5 out of 8 questions.

1) A) Explain the segmented memory concept and memory storage organization in 8086. (5)

B) Draw and explain the flag register of 8086 microprocessor. (5)

C) Explain the following with examples. (10)
i) 8086 instructions: AAM, ROL, CMP
ii) Directives: SEGMENT, DD

2) A) Explain the following addressing modes with example. (5)
a) Immediate
b) Register
c) Direct
d) Register Indirect
e) Register Relative

B) Explain the unconditional jump operation in 8086 with instruction used, syntax and appropriate example. (5)

C) Assume that a processor has the clock frequency 5 MHZ. What should be the value of N in the program segment given below to generate a delay of 300 µ sec. show your calculation? (3)

```
                    ;Clock Cycles
        MOV   CX, N          4
        NOP                  3
L1:     NOP                  3
        NOP                  3
        NOP                  3
        LOOP L1              17 or 5
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D) i) Write an 8086 ALP to multiply a 32-bit number by 16-bit number. A near procedure has to be used to multiply two 16-bit numbers. The parameters are passed between the mainline program and procedure is using register. (5)

ii) For the following 8086 interrupt specify the use, syntax with appropriate instructions and the expected input (2)
a) INT 21H, Function 2CH
b) INT 21H, Function 0AH

3)			Write a 8086 assembly language program to count the number of even and odd numbers in a given array of 10 numbers in the range 0 to 255. Use two (near type) procedures named EVEN and ODD for counting. Store the even count in BH and odd count in DH registers.	(3)
	A)	i)		
		ii)	Write any three difference between procedures and macros.	(3)
		iii)	Write a 8086 program to accept an alphabetic character through the keyboard and check whether it is present in the string 'ICAS manipal'and display the result as 'present' or 'not present' on the screen.	(4)
	B)		What is an interrupt and explain the purpose of interrupt.	(2)
		i)		
		ii)	List the 6 steps carried out by 8086 Microprocessor during the execution of the interrupt instruction, INT.	(6)
	C)		Explain the divide by zero interrupt and non-maskable interrupt of 8086.	(2)
4)			Explain how 8259A accept the various initialization command words with a flowchart.	(2)
	A)	i)		
		ii)	Draw the pictorial representation of 8255 control word format	(2)
		iii)	Explain the various 8255A operational modes and their initialization.	(6)
	B)		Mention and Explain the 4 different functional blocks of 80286	(10)
5)			Draw a neat labelled timing diagram for 8086 minimum mode input and output operations.	(6)
	A)			
	B)		Answer the following: (i) Multi-user operating system (ii) Multi-tasking operating system (iii) calculate the maximum memory for a system that is set up with a page directory having base addresses of 1024 page tables.	(4)
	C)		Explain with a neat diagram how 80386 computes physical address when paging mode is enabled.	(10)
6)			Explain the following features of Pentium processor. i) Advanced programmable Interrupt Controller (APIC) ii) System management model (SMM)	(10)
	A)			
	B)		With a neat diagram, explain the methods of parallel data transfer in 8255A.	(10)
7)			Explain the function of the following pins in 8086 microprocessor. i) NMI ii) MN/MX' iii) DEN' iv) BHE' v) TEST	(10)
	A)			
	B)		Write a 8086program to Read a file and display its contents on the screen.	(10)
8)			Explain the various 80486 signal groups.	(10)

A)

B) Explain the following string instructions with appropriate syntax. (10)

i) MOVS ii) REP iii) REPE iv) CMPS v) SCAS

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